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ATRIPLEX LONGITRICHOMA (CHENOPODIACEAE), A NEW SPECIES FROM SOUTHWESTERN NEVADA AND EAST-CENTRAL CALIFORNIA

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Abstract

Atriplex longitrichoma, a newly reported annual species from southwestern Nevada, and east-central California is described and illustrated. It is most abundant in Pahrump Valley, NV, in abandoned agricultural fields, in roadside borrow pits; and, in favorable years, occurs in contiguous, undisturbed sites. It is a tetraploid species, apparently most closely related to *Atriplex hillmanii* (Jones) Standley.

Introduction

In Pahrump Valley, Nye Co., NV and in neighboring Stewart Valley, Inyo Co., CA, there are several populations of a previously undescribed annual species: *Atriplex longitrichoma* sp. nov. It is most abundant within and around the community of Pahrump, NV, in abandoned cultivated areas, alongside roadways, and in other disturbed sites. In favorable years, it extends into neighboring, undisturbed, desert areas. In some localities, *A. longitrichoma* occurs as a near monoculture, in others it grows in association with several other species.

Atriplex longitrichoma Stutz, Chu, & Sanderson sp. nov. (Fig. 1)—TYPE: USA, Nevada: Nye Co., W side of Pahrump, T20S R53E S14, abundant. *S. Sanderson & G. L. Chu 95303* 26 May 1990 (holotype, BRY; isotypes, CAS, DAV, GH, MO, RENO, RSA, UC, UCR).

Herba annua. Caulis erectus, 10–20 cm altus, sparsim ramosus; rami basales plerumque decumbentes, 10–30 cm longi, teretes, leviter flexuosi, trichomatibus clavatis elongatis dense tectus. Folia sessilia vel inferiora aliquando petiolata; lamina anguste elliptica usque ovato-elliptica, 25–35 mm longa, 10–13 mm lata, integra, acuminato apice, cuneato base anguste, utrinque dense furfurascentes trichomatibus elongatis fragilibus, subtus cinereoviridia, supra viridia; anatomia foliaris Kranz-typi. Staminati et pistillati flores in glomerulis mixti, axillares; perianthium floris staminalis hemisphaericum vel infundibuliforme, 1.5–2.0 mm diam., plerumque 5-partitum, apicibus segmentorum incurvatibus; antherae oblongae, ca. 0.6 mm longae, saepe purpureo-rubellae, leniter exsertae sub anthesi; filamenti filiformes, compressi, ca. 1.5 mm longi; bracteolae floris pistillati marginibus connatae infra medium; stigmata 2, filiformia, ca. 2 mm longa; stylus minus quam 1 mm, inconspicuus. Bracteae fructiferae oblongae usque late ovatae, 5–6 mm longae, 5–6 mm latae, trichomatibus elongatis fragilibus dense tectus, stipite brevi, basibus et areis centralibus induratis, marginibus dentibus lanceolatis irregularibus leviter curvis, utrinque appendicibus numerosis mollo-spinescentibus 2–3 mm longis ferentibus. Utriculus ovatus, 2–2.5 mm latus, pericarpio membranaceo. Semen flavo-brunneolum, perispermate duro; radicula supera.

Annual herb. Stem erect, 10–20 cm tall, sparsely branched, lower branches 10–30 cm long, usually decumbent, frequently longer than stem, terete, slightly flexuous, densely covered with clavate, single-cell, elongate trichomes (Figs. 2, 3). Leaves sessile or lower leaves sometimes petiolate; leaf blade narrowly elliptical to ovate-elliptical, 25–35 mm long, 10–13 mm wide, apex acuminate, base narrowly-cuneate, entire, becoming densely furfuraceous on both surfaces with elongate, fragile trichomes, gray-green abaxially, green adaxially; Kranz-type anatomy. Flowers in mixed axillary glomerules; male flowers most abundant in glomerules on the upper branchlets, perianth half-globose or funnel-shaped, 1.5–2.0 mm in diam., usually 5-parted, segment apices incurved, stamens as many as perianth segments, anthers oblong, ca. 0.6 mm long, frequently reddish purple, slightly exserted when flowering, filaments filiform, compressed, ca. 1.5 mm long; female flowers present in mixed glomerules throughout all branches, margin of bractlets united below the middle, stigmas 2, filiform, ca. 2 mm long, style very short, less than 1 mm. Fruiting bracts oblong to broad-ovate, 5–6 mm long with short stalk, 5–6 mm wide, center part and base indurate, with several soft-spiny 2–3 mm long

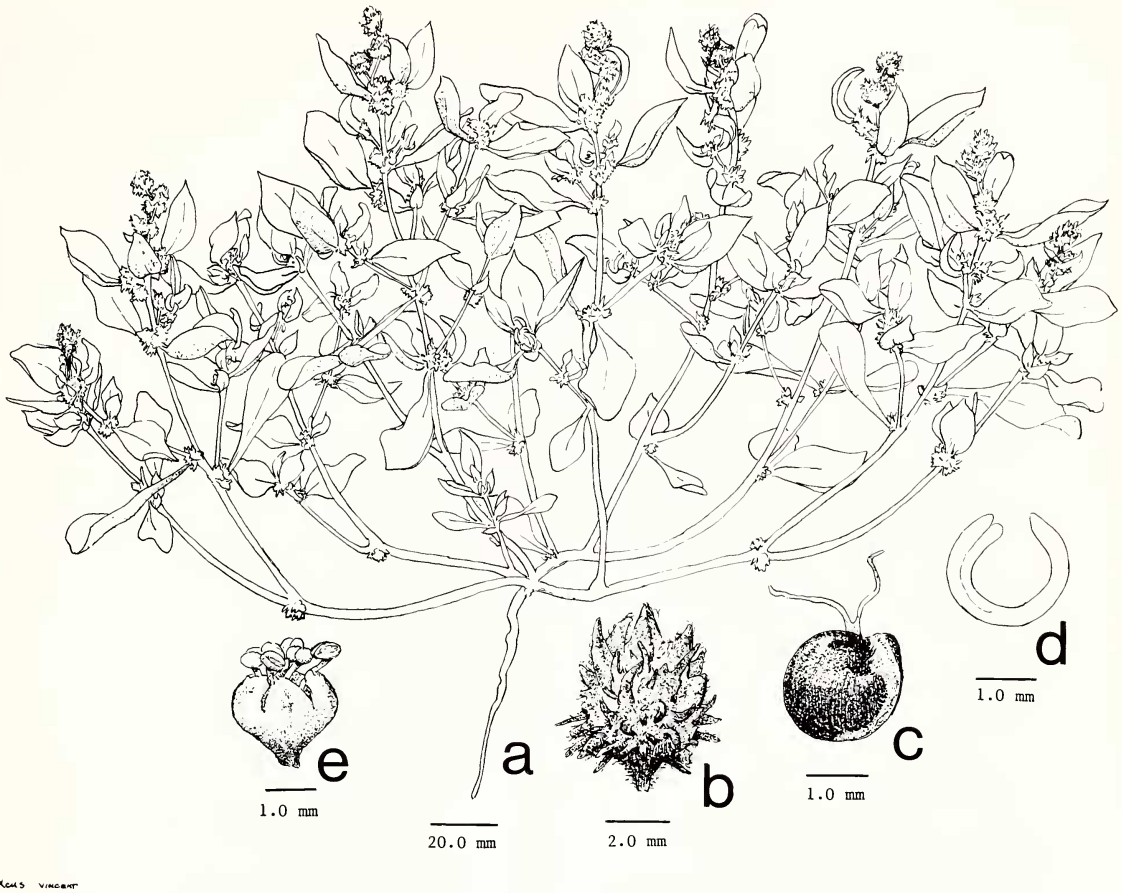

FIG. 1. *Atriplex longitrichoma.* a. Habit. b. Fruiting bract. c. Seed. d. Embryo. e. Male flowers. (Drawings by Marcus Vincent.)

appendages on both surfaces, margins with lanceolate, irregular, slightly curved teeth, densely furfuraceous with elongate, fragile trichomes. Utricle ovate, 2–2.5 mm broad, pericarp membranaceous. Seed yellow-brown, with solid perisperm; radicle superior. Flowering and fruiting period: April–June. Chromosome number: $2n = 36$.

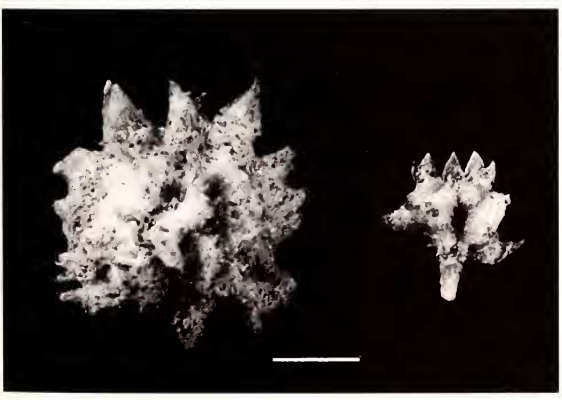

FIG. 2. Fruiting bracts of *Atriplex longitrichoma* (left) and *A. hillmanii* (right). Bar = 3 mm.

Paratypes. USA, California: Inyo Co., Stewarts Valley, Shoshone Road, on alkaline area, *R. S. Ferris 7365* 26 April 1928 (CAS, US); Stewarts Valley, E of Resting Spring Range, S of Dry Lake, ca. 2500 feet, *M. DeDecker 5463* 23 June 1983 (RSA); 20 mi E of Shoshone, *H. C. Stutz 95534* 3 June 1991 (BRY); Nevada, Nye Co., 5 mi W of Pahrump, *S. Sanderson & G. L. Chu 95301* 25 May 1990 (BRY); 5 mi. W of Pahrump, S 7st., *H. C. Stutz 95473* 17 April 1991 (BRY); W side of Pahrump, dense population covering ca. 10 acres but all ripe and dead, *H. C. Stutz & G. L. Chu 9760* 27 June 1995 (BRY).

Distribution and habitat. Atriplex longitrichoma is currently known only from a small area in Pahrump Valley, Nye Co., NV, and neighboring Stewart Valley, Inyo Co., CA. It is abundant in and around Pahrump, NV, occurring in open desert communities, alongside roadways, and in agricultural fields. The soils are gypsiferous clays with pH of ca. 6.5.

FIGS. 3, 4. Scanning electron micrographs of trichomes of *Atriplex longitrichoma* and *A. hillmanii* (scale bars = 100 μm). 3. *A. longitrichoma.* 4. *A. hillmanii.*

Taxonomic relationships. Atriplex longitrichoma appears to be most closely related to *A. hillmanii* (Jones) Standley but differs in several conspicuous characteristics including much larger fruiting bracts (5–6 mm long, 5–6 mm wide, vs. 3–4 mm long, 3–4 mm wide), bearing large, curved, marginal teeth (Fig. 2); decumbent branching habit in which the lower lateral branches are longer than the central branches; and the presence of a copious coating of elongate trichomes on all stems, leaves, and fruits (Fig. 3). Trichomes of *A. hillmanii* are spherical (Fig. 4). So abundant and conspicuous are the trichomes of *A. longitrichoma* that when plants are collected and placed in a container such as a paper sack, the deciduous trichomes accumulate in the bottom of the sack in quantities sufficient to permit them to be picked up with the fingers or by the spoonful.

Atriplex longitrichoma also differs from *A. hillmanii* in having narrow-elliptic to ovate-elliptic vs. oval-deltoid leaves. The leaf margins of *A. longitrichoma* are always entire whereas the leaf margins of *A. hillmanii* are often, but not always, sparingly toothed.

Atriplex longitrichoma differs from *A. argentea* Nutt. by its copious deciduous trichomes, narrower leaves (10–13 mm vs. 25–35 mm) and terete vs. quadrate branches. Fruiting-bract appendages of *A. longitrichoma* are flat or conical, whereas those of *A. argentea* are often folded.

Chromosomally, *A. argentea* is diploid ($2n$ = 18), *A. longitrichoma* is tetraploid ($2n$ = 36), and *A. hillmani* is mostly tetraploid ($2n$ = 36), although some plants are diploid ($2n$ = 18) and others are hexaploid ($2n$ = 54).

Associated species. Atriplex longitrichoma sometimes grows as a near monoculture but most often grows in association with *Atriplex canescens* (Pursh) Nutt., *Atriplex confertifolia* (Torrey & Frémont) S. Watson, *Bromus madritensis* L. ssp. *rubens* (L.) Husnot, *Hordeum marinum* Hudson, *Larrea tridentata* (DC.) Cov., *Prosopis glandulosa* Torrey, *Salsola tragus* L., or *Suaeda moquinii* (Torrey) E. Greene.

Phenology. Flowering and fruiting of *Atriplex longitrichoma* is in early spring (April and May). By mid-June the fruits are fully mature and the plants are mostly dead. In early June, 1996, no living plants of *A. longitrichoma* could be found anywhere. However, many dead plants, left over from 1995, were present in most areas where they had been found earlier. Apparently they were unable to grow during the severe drought of 1996. Since such droughts occur quite often in these deserts, seeds very likely remain dormant in seed banks during unfavorable years.

Plants grown in the greenhouse and nursery at Brigham Young University, Provo, UT, from seed collected from populations near Pahrump, NV, showed the same characteristics as plants growing in the native populations, indicating high heritability of the distinctive features.

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